KOCHIASHVILI, V.I., kand.med.nauk (Moskva)

Treatment of fractures of the femoral diaphysis. Part 2.
Fel'd. i akush. 24 no.5:21-28 My '59. (MIRA 12:8)
(FEMUR--FRACTURE)

KOCHIASHVILI, V.I., kand.med.nauk (Moskva)

Technic of venesection. Fel'd. i akush. 24 no.6:56-60 Je '59. (MIRA 12:8)

(INTRAVENOUS THERAPY) (VEINS--SURGERY)

KOCHIASHVILI, V.I., kand.med.nauk; KOZINA, M.G., starshiy inzhener

Some details of the technic for applying a pancreatic-intestinal anastomosis in resection of the pancreas. Khirurgiia no.3:28-33 '62. (MIRA 15:3)

1. Is kliniki fakul'tetskoy khirurgii (zav. - prof. A.A. Busalov) pediatricheskogo fakul'teta II Moskovskogo gosudarstvennogo medtsinskogo instituta imeni N.I. Pirogova i Nauchno-issledovatel'skogo instituta eksperimental'noy khirurgicheskoy apparatury i instrumentov (dir. - dotsent M.G. Anan'yev).
(PANCREAS—SURGERY) (INTESTINES—SURGERY)

VISHNEVSKIY, A.A.; BYKHOVSKIY, M.L.; VINOGRADOV, V.V.; DANILOV, M.V.; KOCHIASHVILI, V.I.; POTAVSKIY, B.M.

Use of computing machines in the diagnosis of mechanical jaundice. Eksper. khir. i anest. 9 no.4:22-28 Jl-Ag '64. (MIRA 18:3)

1. Institut khirurgii imeni Vishnevskogo (dir. - deystvitel'nyy chlen AMN SSSR prof. A.A. Vishnevskiy) AMN SSSR, Moskva.

OBLOGINA, T.I.; PIYP, V.B.; KOCHIAY, S.

Using seismic methods to study intrusives. Izv. AN SSSR. Ser. geofiz. no.9:1191-1205 S '62. (MIRA 15:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Seismic prospecting)

KOSHTOYANTS, A. F.

"Motor-Defense Conditioned Time Reflexes in Dogs." Cand Biol, Sci, Chair of Anatomy and Physiology of Animals and Humans, Leningrad State Pedagogical Inst imeni A. I. Gertsen, Leningrad, 1954. (KL, No 8, Feb 55)

SO: Sum. No. 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)

DMITRIYEV, A.S.; KOCHIGINA, A.M., (Yaroslavl')

Significance of time as a stimulus of conditioned reflex function. Usp.sovr.biol.40 no.1:31-51 Jl-Ag '55.(MLRA 8:10)
(REFLEX, CONDITIONED,
time as stimulus, review)
(TIME,
as stimulus in conditioned reflex, review)

EXCERPTA MEDICA Sec 2 Vol 12/2 Physiology Feb 59

869. MOTOR DEFENSIVE CONDITIONED REFLEXES TO TIME IN DOGS (Russian text) - Kochigina A. M. Dept. of Anat. and Physiol. of Man and Animals, Uzhhorod State Pedagogical Inst., Yaroslavl - ZH. VYSSH. NERV. DEYAT. 1958, 8/2 (208-214) Tables 2

Motor defensive conditioned reflexes to time in dogs are formed with greater difficulty than reflexes to other stimuli. The following 3 stages were observed in the formation of the reflexes: (1) Stage of generalized conditioned reflex involving a considerable number of intersignal reactions through the whole intersignal period. (2) Stage of a differentiated conditioned reflex to time which is peculiar in that intersignal responses occur only in the 2nd half of the 5 min. interval. (3) Stage of differentiated conditioned reflex to time, which is characterized by a complete absence of intersignal responses and by a manifestation of the reaction 15 to 40 sec. prior to the stimulation. These stages in the formation of the conditioned reflex to time seem to be related to the alternation of excitatory and inhibitory processes in the cerebral hemispheres.

S/169/63/000/001/002/062
D218/D307

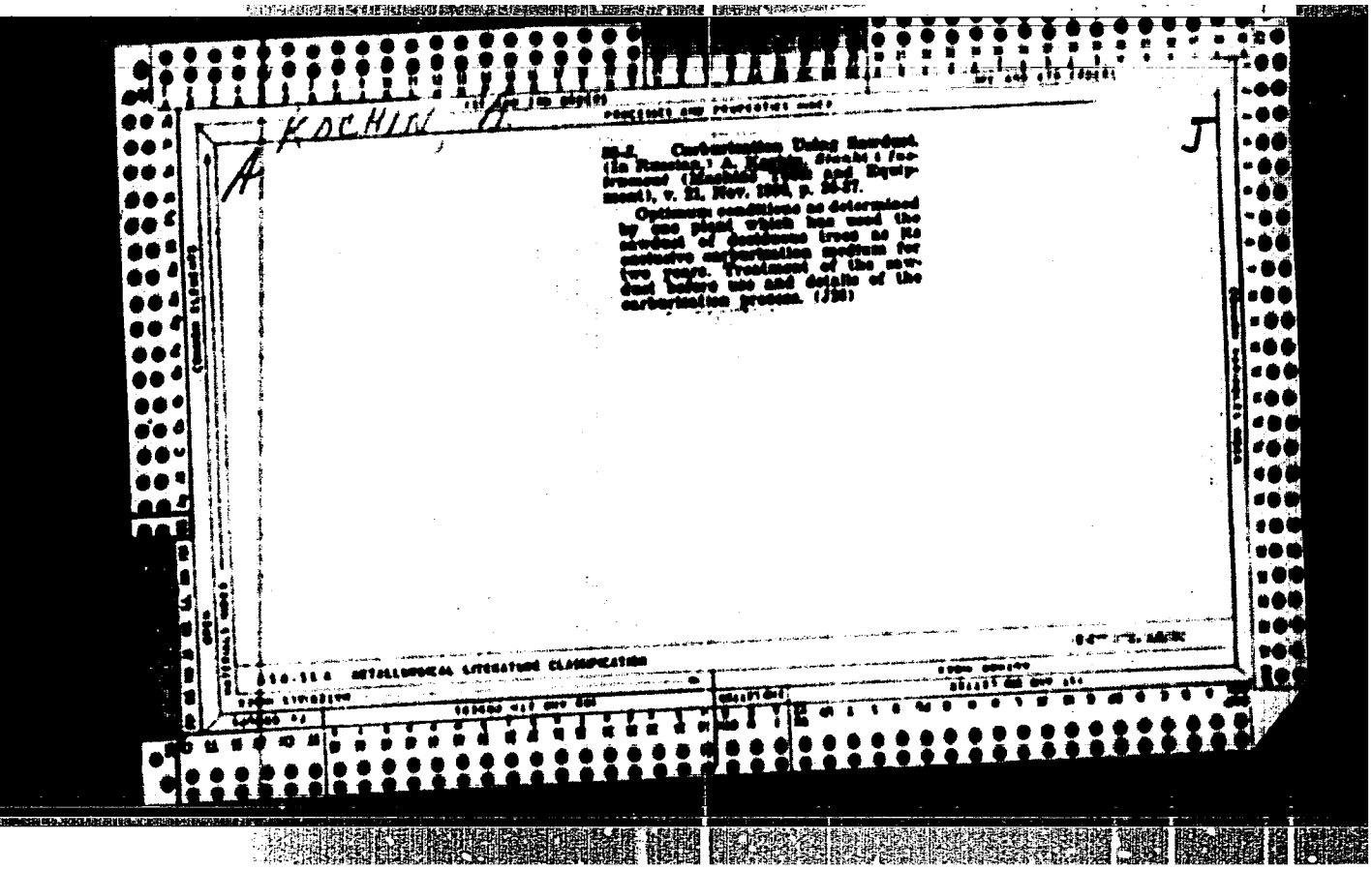
AUTHORS: Kochi-Karel, Bodlak, Alois

TITLE: International comparative geomagnetic measurements in 1960

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 1, 1963, 7, abstract 1A26 (In collection: Rezul'taty geomagnitn., tellurich. i ionosfern. izmereniy, proved. v observ. Prugonitse, Budkov i Panska Ves v 1959, godu. Praga, Chekhosl. AN, 1962, 7-142)

TEXT: In 1960 the Nimegk Observatory (E. Germany) carried out comparisons of absolute magnetic instruments of the Geophysics Institute of the Czechoslovak AS with the instruments at the Nimegk Observatory. Corrections were obtained to the results of absolute measurements and also the differences between the Nimegk and Prugonitse standards.
[Abstracter's note: Complete translation]

Card 1/1



KONSTANTINOV, A.A.; KOCHIN, A.Ye.

USCh-2 plant for absolute activity measurements of beta emitters. Trudy inst. kom. stand., mer i izm. prib. no.69: 13-22 '62. (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. Mendeleyeva.

KONSTANTINOV, A.A.; KOCHIN, A.Ye.; PEREVALKIN, V.V.

Standard unit USCh-5. Nov. nauch.-issl. rab. po metr. VNIIM no.2:4-7 '64. (MIRA 18:4)

ACCESSION NR: AP4020336 S/0089/64/016/003/0255/0256

AUTHOR: Andreyev, O. L.; Kochin, A. Ye.; Stukov, G. M.; Yaritsy*na, I. A.

TITLE: Absolute measurement of neutron source yield by the gold foil activation method

SOURCE: Atomnaya energiya, v. 16, no. 3, 1964, 255-256

TOPIC TAGS: neutron source yield, thermal neutron, gold foil activation method, resonance activity, Ra Be source

ABSTRACT: Thermal neutron distribution of a Ra-Be neutron source in a moderator (mostly distilled water) is measured using gold foils activation analysis. Gold foils are placed at several points and the absolute amount of β-activity of these foils is measured. Since thermal neutron distribution does not depend on the type of detector, the relation of specific activity of gold foil to the number of detector readings placed at the same distance from the neutron source, is constant for any distance. A complete yield of neutron source Q may be obtained from the ratio

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ACCESSION NR: AP4020336

$$q = 4\pi \frac{\sigma_H n_H}{\sigma_{Au} n_{Au}} F \int_0^\infty I(r) r^2 dr,$$

where σ_H and σ_{Au} are the thermal neutron cross sections of capture by hydrogen and gold; n_H and n_{Au} are atom concentrations of hydrogen in water and of gold in foil; and F is the relation of specific activity of gold foil to the number of neutron detector readings at the same distance. The integral value is found be means of measuring I (r) at various distances from the source. In practice, the integration is by the graphic method. The formula is only true for detectors whose efficiency satisfied the 1/v law. The cross section for Au^{197} follows this law only up to an energy of 4.95 ev. (first resonance); therefore a portion of the resonance activity determined with the aid of a cadmium screen should be considered. In measuring neutron yield of Ra - Be-source one should consider correction in self-shielding of neutron flux in gold foil and perturbation of true distribution of neutrons in the moderator during calculation of coefficient F. This correction is (5 ± 1)% for circular foil with a 20 mm. diameter and a 0.02 mm. thickness. In computing coefficient F, a correction should be

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ACCESSION NR: AP4020336

introduced into resonance absorption of neutrons by gold. After computation the correction was (0.5 ± 0.1)%. A correction in thermal neutron absorption in the same source, computed by macroscopic cross section of source absorption is (0.7 ± 0.1)%. Based on the works of A. de Troyer et al (Bull. cl. sci. Acad. roy. Belgique, 40, 2, 150 (1954)) and K. Geiger and G. Whyte (Canad. J. Phys., 37, 256 (1959)) the correction in fast neutron absorption in oxygen is (2.2 ± 0.3)%. In addition, the determination error of spatial distribution area of neutrons is ± 1.3% and the determination error of the cross section for σ_{Au} is ± 0.3. For σ_{H} it is ± 0.6%. Error in absolute measurement of activity is 1%. The root mean square error of the method is ± 2.1%. Having taken these corrections into account, it was determined that neutron yield of Ra - Be of source Q is (3.22 ± 0.07) x 10^6 neutr./sec. Orig. art. has: 2 tables

ASSOCIATION: None

SUBMITTED: 18Apr63 DATE ACQ: 31Mar64 ENCL: 00

SUB CODE: NP NO REF SOV: 000 OTHER: 005

Card 3/3

KONSTANTINOV, A.A.; PEREPELKIN, V.V.; KOCHIN, A.Ye.

International comparison of the specific activity of P^{32}, Co^{60}, Tl^{204} solutions and the activity of "solid" Co^{60} sources. Atom. energ. 19 no.1:65-67 Jl '65. (MIRA 18:7)

L 4391-66 EWT(m) IAAP DM
ACC NR: AP5028437 SOURCE CODE: UR/0089/65/019/001/0065/0067

AUTHOR: Konstantinov, A. A.; Perepelkin, V. V.; Kochin, A. Ye.

31

ORG: none

TITLE: International comparisons of the specific activity of ^{32}P, ^{60}Co, and ^{204}Tl solutions and the activity of ^{60}Co solid sources

SOURCE: Atomnaya energiya, v. 19, no. 1, 1965, 65-67

TOPIC TAGS: radiation chemistry, radioisotope, solution property, phosphorus, cobalt, thallium, scientific standard

ABSTRACT: Work on the international standardization of the specific activity of ^{32}P, ^{60}Co, and ^{204}Tl dissolved sources and ^{60}Co solid sources (i.e., specially prepared ^{60}Co sources on thin films), carried out in Jan. 1961 and in March and April 1963 in national laboratories of several countries, is described. Results are presented for ^{32}P, ^{60}Co solutions and ^{60}Co solid sources. Orig. art. has: 3 figures. [JA]

SUB CODE: NP, GC, GO / SUBM DATE: 09Jul64 / ORIG REF: 002 / OTH REF: 004

Card 1/1

UDC: 539.16.08

BOGDANOV, Yu.V.; KOCHIN, O.G.; KUTYREV, E.I.; TRAVIN, L.V.; FLOKTISTOV, V.P.

Geology, characteristics of the distribution and conditions governing the formation of cuprous sandstones in the northeastern part of the Olekma-Vitim highland. Sov.geol. 8 no.11: 3-18 N '65. (MIRA 19:1)

BOGDANOV, Yu.V.; KOCHIN, O.G.

Geology and characteristics of the distribution of gold-copper-complex metal deposits in the northeastern part of the Lake Baikal region. Trudy VSEGEI 103:127-144 '64 (MIRA 17:8)

KOCHIN, O.G.

Hydrothermally alterated rocks of the Akatuyevskoye lead-zinc deposits (eastern Transbaikalia) and their prospecting significance. Trudy VSEGEI 60:181-189 '61. (MIRA 15:3)
(Transbaikalia--Rocks, Crystalline and metamorphic) (Prospecting)

PREDOVSKIY, A.A.; KOCHIN, O.O.

Some geological characteristics and prospecting criteria of high concentrations and deposits of uranium in coals. Vest.LGU 18 no.6:36-45 '63. (MIRA 16:4)
(Uranium ores) (Coal)

GELLER, I.Kh.; ABDULLAYEV, G.B.; KOCHIN, G.I.; ALIYEV, M.G.

Rectifying selenium elements suited to currents of higher density. Izv. AN Azerb. SSR. Ser.fiz.-mat. i tekh.nauk no.5:65-73 '61. (MIRA 15:2)

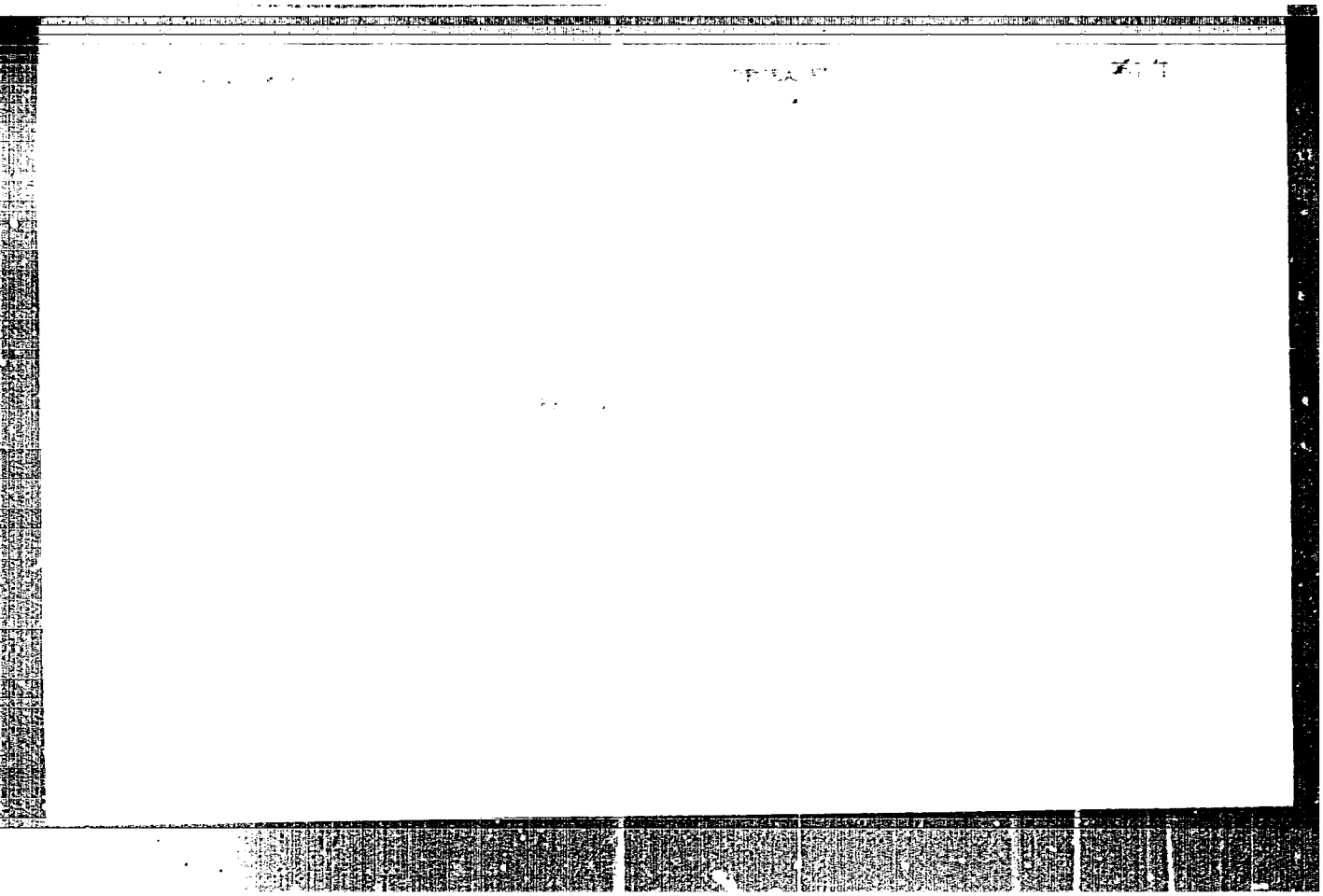
(Electric current rectifiers) (Selenium)

KOCHIN, Georgiy Yevgen'yevich; GEYMAN, V.G., otv. red.[deceased];

[Agriculture in Russia during the period of the formation of the Russian centralized state, the end of the 13th to the beginning of the 16th century] Sel'skoe khoziaistvo na Rusi v p[illegible] obrazovaniia Russkogo tsentralizovannogo gosudarstva konets XIII-nachalo XVI v. Moskva, Nauka, 1965. 461 p. (MIRA 18:4)

KOCHIN, I.S., inzh.

Self-propelled cleaning machinery. Stroi. i dor. mash. 9 no.4: 17-20 Ap '64. (MIRA 18:1)



APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520005-7"

KOCHIN, Nikolay Ivanovich . 1902-

Ivan Petrovich Kalibin, 1735-1818. Izd. perer. i dop. Moskva, Molodaia gvardiia, 1957. 237 p. illus 21 cm. (MIRA 11:11)
(Kalibin, Ivan Petrovich, 1735-1818)

KOCHIN, Nikolay Yevgrafovich; KIBEL', Il'ya Afanas'yevich; ROZE, Nikolay Vladimirovich; ROZAL'SKAYA, N.I., red.; MIKHLIN, E.I., tekhn. red.

[Theoretical hydromechanics] Teoreticheskaia gidromekhanika. Pod red. I.A.Kibelia. Moskva, Fizmatgiz. Pt.1. Izd.6. ispr. i dop. 1963. 583 p. Pt.2. Izd.4., perer. i dop. 1963. 727 p. (MIRA 16:10)

(Fluid mechanics)

KOCHIN, N.Ye., akad.; KOCHINA, P.Ya., akad., otv. red.; TALITSKIKH, N.A., red. izd-va; IEFIFANOVA, L.B., tekhn. red.

[Vector analysis and fundamentals of the calculus of tensors] Vektornoe ischislenie i nachala tensornogo ischisleniia. Izd.6. Moskva, Izd-vo Akad. nauk SSSR, 1961. 426 p. (MIRA 14:10)
(Vector analysis) (Calculus of tensors)

GELLER, I.Kh.; ABDULLAYEV, G.B.; KOCHIN, S.I.; ALIYEV, M.G.

Selenium rectifiers involving a higher current density.
Izv. AN Azerb.SSR.Ser.fiz.-mat. i tekh. nauk no.4:51-63
'61. (MIRA 14:12)
(Electric current rectifiers)
(Selenium)

VOL'POVA, Matil'da Vladimirovna; TISOVSKAYA, Anna Frantsevna; KOCHIN, V.P., red.; BRUSKINA, R.I., red.izd-va; GRIGORCHUK, L.A., tekhn.red.

[Collection of texts on Refrigerating Engineering (in English)] Sbornik tekstov po kholodil'noi tekhnike (na angliiskom iazyke). Moskva, Vysshaia shkola, 1963. 81 p. (MIRA 16:5)

(Refrigeration and refrigerating machinery)

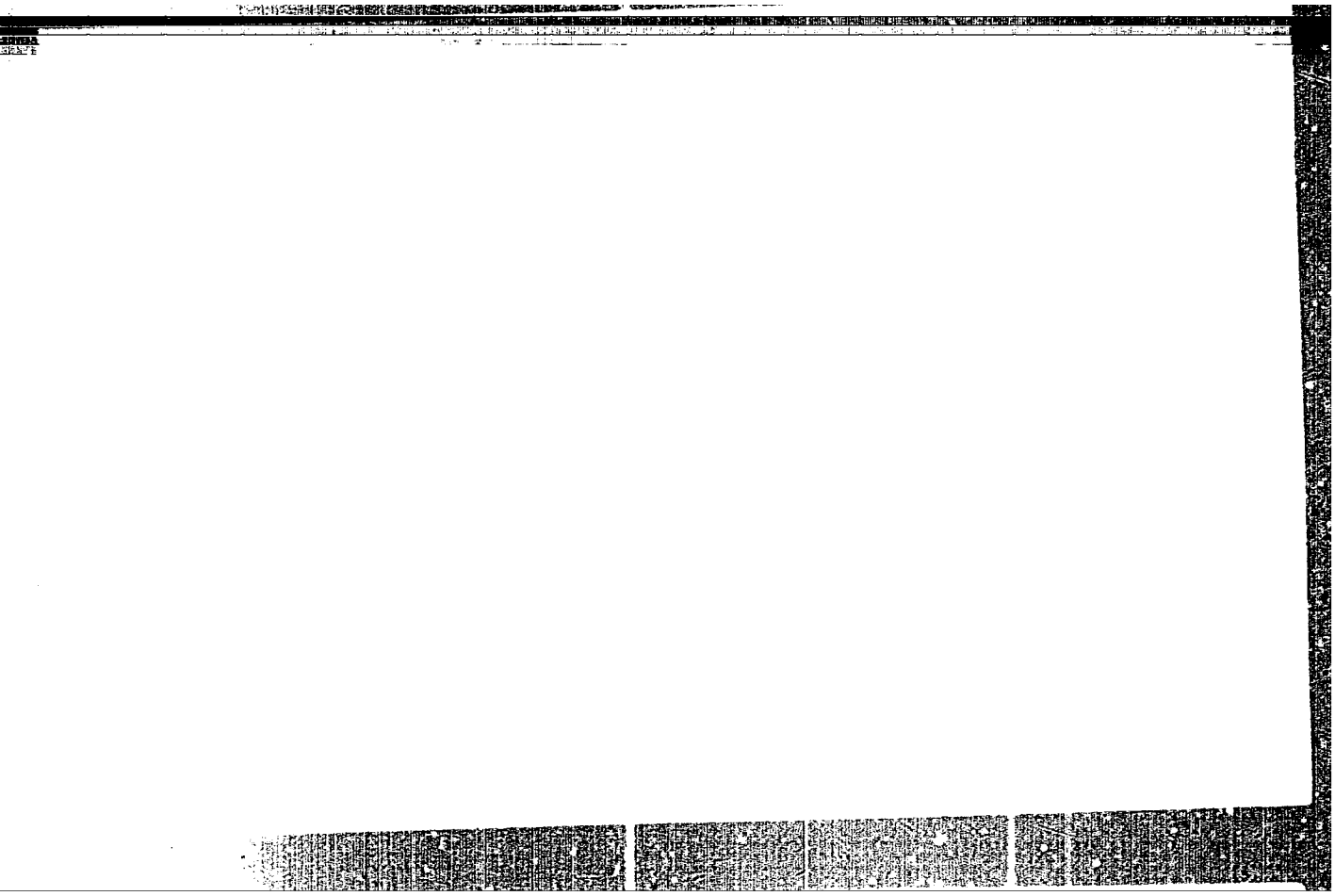
MITSKEVICH, Marta Petrovna; PLECHKO, Zhanna Petrovna; KOCHIN, V.P., red.; ZASLAVSKAYA, R.I., red. izd-va; GRIGORCHUK, L.A., tekhn. red.

[Texts on physical chemistry in English] Sbornik tekstov po fizicheskoi khimii na angliiskom iazyke. Moskva, Vysshaia shkola, 1963. 102 p. (MIRA 16:7)
(English language—Technical English)
(Chemistry, Physical and theoretical)

TILYUPO, G.A.; CHELOK'YAN, N.D.; KOCHINA, A.I.

Studying high-boiling fractions of the Il'skiy oil. Izv. vys.uchab.zav.; neft' i gaz 2 no.9:63-69 '59.
(MIRA 13:2)

1. Groznenskiy neftyanoy institut.
(Il'skiy region--Petroleum--Refining)



APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723520005-7"

KOCHINA, I. N.

Dissertation: "Some Questions on the Theory of Wave Motion of a Liquid." Cand Phys-Math Sci, Mechanics-Mathematics Faculty, Moscow State U imeni M. V. Lomonosov, 7 May 54)
(Vechernyaya Moskva, Moscow, 28 Apr 54)

SO: SUM 243, 19 Oct 1954

USSR/Physics - Waves on liquid surface FD-2661

Card 1/2 Pub. 85-14/16

Author : Kochina, I. N. (Moscow)

Title : Waves on the surface of separation between two liquids which are flowing at an angle to each other

Periodical : Prikl. mat. i mekh., 19, 5 Sep-Oct 1955, 628-634

Abstract : The author considers the spatial wave motion on the boundary of separation between two liquids which are flowing at an angle to each other. This problem was posed by L. N. Sretenskiy ("Waves on the surface of separation of two currents flowing at an angle to each other," Izvestiya AN SSSR, No 12, 1952), who considered the free waves on the surface of separation between two liquids on the assumption that the upper and lower liquids extend to infinity. In the first separation both liquids are assumed to extend to infinity, but in the lower liquid a body of arbitrary shape is placed. In the second separation the lower liquid is assumed to bounded by a horizontal bottom, on which is located an obstacle of arbitrary shape. In conclusion the authoress thanks L. N. Sretenskiy, who guided her present work. Seven references: e.g. M. I. Kantorovich, Yu. K. Murav'yev, "Derivation of the laws

governing the reflection in geometrical optics on the basis of an asymptotic treatment of the problem of diffraction," Zhurnal tekh. fiziki, 12, No 3, 1952

Institution :

Submitted : May 13, 1955

USSR/Physics - Vortical motion FD-3097

Card 1/1 Pub. 85 - 12/16

Author : Kochina, I. N. (Moscow)

Title : A class of vortical motions of an ideal incompressible fluid

Periodical : Prikl. mat. i mekh., 19, Nov-Dec 1955, 756-759

Abstract : In an unpublished work, "Flow of incompressible fluid parallel to plane" (held in archives of Central Aero-Hydrodynamics Institute im. N. Ye. Zhukovskiy), the author S. A. Chaplygin posed the problem of generalizing plane-parallel flows of an ideal incompressible fluid preserving only the property that each particle possess a velocity parallel to the given plane; moreover he considered that the forces acting upon the fluid possess potential U(x,y,z) and stationary motion. In the present article the writer expounds the results of Chaplygin by another simpler method. She also considers certain small-amplitude waves on the surface of Chaplygin flow. She acknowledges the guidance of L. N. Sretenskiy.

Institution :

Submitted : May 13, 1955

KOCHINA, I.N.

11(4) PHASE I BOOK EXPLOITATION SOV/1443

Moscow. Neftyanoy institut.

Voprosy dobychi nefti i mashinostroyeniya (Problems of Petroleum Production and Petroleum Engineering) Moscow, Gostoptekhizdat, 1957. 393 p. (Its: Trudy, vyp. 20) 1,000 copies printed.

Executive Eds.: Martynova, M.P., and K.P. Svyatitskaya; Tech. Ed.: Polosina, A.S.; Editorial Board: Zhigach, K.F. (Resp. Ed.) Professor, I.M. Murav'yev, Professor, A.A. Tikhomirov, Candidate of Economic Sciences, Yegorov, Candidate of Economic Sciences, M.M. Charygin, Professor, F.F. Dunayev, Professor, I.A. Charnyy, Professor N.I. Chernozhukov, Professor, Ye. M. Kuzmak, Professor, V.N. Dakhnov, Professor, G.M. Panchenkov, Professor, N.S. Nametkin, Doctor of Chemical Sciences, N.A. Almazov, Docent, V.I. Biryukov, Docent, V.N. Vinogradov, Docent, E.I. Tagiyev, V.M. Gurevich.

PURPOSE: This book is intended for specialists working in the petroleum and gas industry and for advanced students at petroleum vuzes.

Card 1/6

COVERAGE: The book is a collection of articles written by professors and faculty members of the Petroleum Institute im. Academician I.M. Gubkin. It deals with problems connected with the development of oil-bearing mother rocks, radiometry as applied to oil wells, production of carboxymethyl ethers of cellulose and their use in drilling to open productive formations. Methods for softening the sea water used in preparing drilling mud, the selection of the type of steel for rock bit cutters, the theory of circular milling with plain milling cutters, and the flow of viscous liquids in rotating pipes and open channels are also discussed in individual articles. There are 50 references, of which 24 are Soviet.

TABLE OF CONTENTS:

CHARNYY, I.A.; KVDOKIMOVA, V.A.; KOCHINA, I.N.

Increasing the ultimate oil recovery of imperfect wells containing bottom waters by means of simultaneous and separate extraction of water and oil. Izv. vys. ucheb. zav.; neft' i gaz no.2:59-68 '58. (MIRA 11:8)

1. Moskovskiy neftyanoy institut im. akad. I.M. Gubkina.
(Petroleum engineering)

BARENBLATT, G.I. (Moskva); ZHELTOV, Yu. P. (Moskva); KOCHINA, I. N. (Moskva)

Basic concepts in the theory of the flow of uniform fluids through fractured rocks. Prikl. mat. i mekh. 24 no.5:852-864 S - O '60. (MIRA 14:3)

(Oil reservoir engineering)

KOCHINA, I.N.; MYASNIKOV, Yu.A.

Calculation of pressure in pumping fluid to a stratum through a rectilinear gallery. Izv.vys.ucheb.zav.; neft' i gaz 5 no.12: 49-52 '62. (MIRA 17:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.

CHARNYY, I.A.; YEVDOKIMOVA, V.A.; KOCHINA, I.N.

Determining the free output of gas wells. Gaz. prom. 8 no.4: 3-6 '63. (MIRA 17:10)

KOCHINA, M.P.; URYAYEV, I.A.; BRIGEVICH, R.F.

Method of preparing large-size β-particle radiators. Radiokhimiia 6 no.2:255-258 '64. (MIRA 17:6)

AGLINTSEV,K.K.; KOCHINA, M.P.; URYAYEV, I.A.

Unit with extrapolation chambers for measuring the intensity of radiation doses from plane Beta-ray emitters. Nov. nauch.-issl. rab. po metr. VNIIM no.2:32-35 '64.

UPK apparatus for studying the fields and intensities of β-rays from plane emitters. Ibid.:36-40 (MIRA 18:4)

KOCHINA, N.G.

Examples of hyperbolic and hyperbolic-elliptical motion in a restricted hyperbolic problem of three bodies. Biul.Inst.teor.astron. 5 no.7:445-454 '53. (MLRA 7:5)
(Problem of three bodies)

KOCHINA, N. G.

"Example of Motion in a Limited Problem of Three Bodies," Byul. In-ta teor. astronomii AN SSSR, 5, No 9, 1954, pp 617-622

Presents a numerical example of motion in a paratolic problem of three bodies in which a peculiar exchange of satellites occurs. The paratolic-elliptical character of motion is established by means of criteria suggested by G. A. Merman (RZhAstr, 1954, 1744). The section of trajectory in which the exchange occurs is partially covered by numerical integration and partially by evaluations derived by authoress from Lagrange equations. (RZhAstr, No 4, 1955)

SO: Sum. No. 568, 6 Jul 55

MURMAN, G.A.; KOCHINA, N.G.

Applying the method of evaluations to O.IU.Shmidt's example. Biul.Inst.teor.astron. 6 no.2:85-111 '55. (MIRA 13:3)
(Problem of three bodies)

3.2160

39453
S/618/62/000/009/001/001
1046/1246

AUTHOR: Kochina, N. G.

TITLE: The effect of earth's gravitation anomalies on the motion of artificial satellites

SOURCE: Akademiya nauk SSSR. Institut teoreticheskoy astronomii. Trudy. no. 9, 1962. 65-205

TEXT: In view of the proximity of artificial satellites to the earth, it is insufficient to allow for only first-order effects of the earth's oblateness; higher-order anomalies, tri-axiality, asymmetry with respect to the equator, etc. should also be taken into account. A total of 23 harmonics was used in the expression for terrestrial gravitation potential as applied to two specific problems: motion of fictitious artificial satellites in 2-hour orbits with $i = 90°$, and $i = 65°$. Numerical integration was carried out for equations of motion expressed as right coordinates a) with all the 23 harmonics; b) with the elliptical component and the harmonic allowing only for first order effects of oblateness, and c) with the components of (b) plus each of the remaining 22 harmonics — one at a time. The results gave the characteristic effects of the various harmonic components of the potential; the numerical data are arranged in a table and graphs provide a criterion for the number of harmonics to be considered in calculations of any desired accuracy. The numerical integration, carried out on the BESM-2 computer, is outlined and discussed in considerable detail; the accumulated errors in right coordinates and in the radius of the orbit are estimated ($\pm$ 0.04 km and $\pm$ 0.002 km respectively) There are 21 figures and 25 tables.

SUBMITTED: July 22, 1961

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1256

S/816/61/000/024/002/003

AUTHORS: Makover, S. G., Gontkovskaya, V. T., Kochina, N. G., Sochilina, A. S., and Subbotina, N. S.

TITLE: Investigation of the motion of the second Soviet artificial earth satellite (Sputnik II or 1957 β).

SOURCE: Akademiya nauk SSSR. Astronomicheskiy sovet. Byulleten' stantsiy opticheskogo nablyudeniya iskusstvennykh sputnikov Zemli. no. 24. 1961, 11-16.

TEXT: This is a presentation of the results of calculations of the orbit elements of Sputnik II from November 1957 to March 1958, based on visual tracking data, as used in the short-range prediction of the ephemerides. The method employed is outlined in the paper by Makover, S.G., The orbit determination of artificial earth satellites. Byulleten' stantsiy ... no. 24, 1961, 3-11 (Abstract S/816/61/000/024/001/003). Computations were performed on the БЭСМ (BESM) electronic high-speed computer of the AS USSR Computing Center (A. A. Dorodnitsin, Director); all preparatory work was done at the State Astronomical Institute imeni Shternberg (D. Ya. Martynov, Director). The computation program comprised the following specific steps: (1) Computation of the instantaneous orbit elements for the time of a given observation; (2) computation of the rectangular satellite coordinates from

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the formulas of its elliptical motion; (3) computation of the local sidereal time and the rectangular coordinates of the observation station; (4) computation of the spherical equatorial coordinates of the satellite and comparison between calculated and observed coordinates; (5) computation of the coefficients of tentative equations, and (6) computation of the corresponding component coefficients for the normal equations. Computational stages (1) through (6) were performed consecutively for each observer, resulting in the ultimate coefficients of the normal equations. The following operations were then performed: (7) Determination of corrections to the elements as obtained from the solution of the system of normal equations, and determination of an improved system of elements; (8) determination of weight factors for each unknown. An entire cycle of orbit improvement from 100 observations required one minute of machine time. Upon completion of all computations including stages (1) through (8), the entire computational cycle was repeated until convergence of successive approximations was achieved (usually, 5 to 6 cycles). An additional computation was made of the so-called "variations," i.e., the changes of the right ascension and declination of the satellite due to an assumed 1-second error in the time determination by the observer; this variation was found to be useful in the analysis and reconciliation of differences between observational values and theory. Elimination of gross errors, e.g., incorrect time readings, mistaken identities of reference stars, etc., was achieved by eliminating any observation with a

investigation of the motion ... S/816/61/000/024/002/003

spherical-coordinate error of more than a given limit (15° in the first improvement cycle, down to 5° in the last cycle). The observations used came primarily from the Soviet optical-satellite observation tracking network and consisted of [illegible] and declination data referred to the equinox 1960.0, the nominal [illegible] was assumed to be 0".1, time accuracy 0^s.1. However, even after elimination of gross errors, the actual mean-square accuracy of a single observation was ±2".0, possibly attributable primarily to bad time keeping. Initially, data were reported via the Astronomicheskiy sovet (Astronomical Council), AS USSR, later directly by telegraph. Some foreign observations were used, but most arrived too late for inclusion. A few high-accuracy photographic observations made at Pulkovo, Moscow, and elsewhere were included. As a by-product, the differences between the observed and the computed coordinates of the satellite were used to grade the quality of the data provided by each station. Numerical results are presented in 1 table; there is 1 Soviet (only) reference.

ASSOCIATION: Institut teoreticheskoy astronomii AN SSSR (Institute of Theoretical Astronomy, AS USSR).

SUBMITTED: July 6, 1961.

Card 3/3

KOCHINA, N.G.

Effect of the earth's gravitational anomalies on the motion of artificial satellites. Trudy ITA no.9:65-85 '62. (MIRA 15:12)
(Gravity) (Artificial satellites—Tracking)

Kochina, N. N.

USSR/Microbiology - Antibiosis and Symbiosis, Antibiotics. F-2

Abs Jour : Ref Zhur - Biol., No 4, 1958, 14738

Author : Kochina, N.N.
Inst : -
Title : Effect of Antibiotics on Salmonella. Communication I. Sensitivity of B. Breslau to Biomycin, Levomycetin, Syntomycin, Streptomycin and Sanasin.

Orig Pub : Tr. Khar'kovsk. n.-i. in-ta vaktsin i syvorotok, 1956, 23, 73-78

Abstract : The sensitivity to antibiotics of 10 stock and 10 freshly isolated strains of B. breslau was determined by the method of serial dilution. Most active as to bacteriostatic activity was biomycin, inhibiting growth of microorganisms in concentrations of 0.5-8.0 γ/ml; then levomycetin (14 strains from 1-32 γ/ml, 6 strains from 1000-1500 γ/ml), syntomycin (14 strains 2-16 γ/ml and 6-- 1000-1500 γ/ml), streptomycin (32-- 250 γ/ml), and

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10 (4)
AUTHOR: Kochina, N. N. SOV/20-126-3-19/69

TITLE: Exact Solution of the Equations of Motion of Magnetic Hydrodynamics, Bounded by Application to Similarity (Tochnyye resheniya uravneniy dvizheniy magnitnoy gidrodinamiki, predel'nykh k avtomodel'nym)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 3, pp 528-531 (USSR)

ABSTRACT: First, the equations of the onedimensional non-steady motion of a perfect electrically conductive gas are written down (1) and the case of cylinder symmetry is discussed. The solutions of the equations for the non-steady multidimensional motion of a gas in the case of a lacking magnetic field, which were found by L. I. Sedov (Refs 1, 2), are mentioned. In the present paper a generalization of these results is carried out for magnetic hydrodynamics. In this connection a paper by V. P. Korobeynikov (Ref 3) is mentioned, after which the solutions of system (1), which are analogous to those found by L. I. Sedov, are written down. Herefrom the conditions for the front of a magneto-hydrodynamic shock wave are obtained, and in the following exact solutions of the equations (1) are

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Exact Solution of the Equations of Motion of Magnetic Hydrodynamics, Bounded by Application to Similarity

SOV/20-126-3-19/69

developed. A diagram shows the distribution curves of the characteristics of the motion of the front of the shock wave (Fig 1). The author then investigates two integrals of a system of four ordinary differential equations obtained from the solutions of (1), both in the form which is analogous to that of Sedov, and also in the form (4). The selection of constants is dealt with in detail. There are 2 figures and 5 references, 4 of which are Soviet.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute imeni V. A. Steklov of the Academy of Sciences, USSR)

PRESENTED: February 13, 1959, by L. I. Sedov, Academician

SUBMITTED: February 2, 1959

Card 2/2

KOCHINA, N.N. (Moskva); NIKOL'SKAYA, N.S. (Moskva)

Expansion of a piston in water. Prikl. mat. i mekh. 23 no.1: 93-100 Ja-F '59. (MIRA 12:2)
(Fluid mechanics)

10(4)
AUTHOR: Kochina, N. N. SOV/20-126-6-17/67

TITLE: On the Singularities in the Neighborhood of the Center of a Detonation and on the Generation of Two Shock Waves (Ob osobennostyakh vblizi tsentra vzryva i o vozniknovenii dvukh udarnykh voln)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 6, pp 1216-1219 (USSR)

ABSTRACT: The problem of the forceful punctiform detonation in an ideal compressible medium was investigated by N. N. Kochina and N. S. Mel'nikova (Ref 2), and by Yu. L. Yakimov (Ref 3). In these papers the motions were described by the application of similarity. Great interest is said to be devoted to the investigation of the media with equations of state being near to those, by which the application of similarity was carried out. The author proceeds from the computation of equations (1) and (2) for the inner energy and for the entropy change respectively; the dimensionless variables are given in (4). The solution of the problem of a punctiform detonation in compressible media amounts to the integration of the nonlinear equation system of partial derivatives (5); the boundary conditions (7) hold for

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the front of the shock wave. For the integration of (5) this equation system is linearized, and one obtains the linear system (12) of common differential equations. Finally, consideration is devoted to a medium differing but slightly from an ideal gas. The qualitative investigation of the common differential equation of the front wave motion shows that a second shock wave forms together with the first one, from the center of which it originates. The author thanks L. I. Sedov for his supervision, and M. L. Lidov for discussions held together. There are 8 references, 7 of which are Soviet.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov of the Academy of Sciences, USSR)

PRESENTED: March 6, 1959, by L. I. Sedov, Academician

SUBMITTED: February 25, 1959

KOCHINA, N. N. (Moscow)

"On the Point Explosion in a Compressible Medium in Cases Permitting Nearly Selfsimilar Solutions."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

10.2300

80241

S/040/60/024/02/002/032

AUTHORS: Kochina, N. N., Mel'nikova, N. S. (Moscow)

TITLE: On the Motion of the Piston in an Ideal Gas

PERIODICAL: Prikladnaya matematika i mekhanika, 1960, Vol. 24, No.2 pp. 213-218

TEXT: The authors consider a gas motion caused by a piston which moves with the velocity $v_n = ct^m$. Such a motion can arise under punctiform explosion with divergent shock wave or under peripheral explosion with convergent shock wave. It is assumed that the gas possesses the density ρ_1 and the pressure $p_1 \neq 0$ in the initial moment. As independent variables and sought functions the authors introduce the nondimensional quantities

$$\lambda = \frac{r}{r_2}, \quad q = \frac{a_1^2}{c^2}, \quad f(\lambda,q) = \frac{v}{v_2}, \quad R(\lambda,q) = \frac{\rho}{\rho_2}, \quad P(\lambda,q) = \frac{p}{p_2}$$

where a_1 is the velocity of sound in the resting gas, r_2 the radius of the shock wave, c its velocity, v_2, ρ_2, p_2 the velocity, density and pressure behind the front of the shock wave. The problem leads to three partial non-linear differential equations which must satisfy in a domain of the λ,q-plane certain initial conditions for q = 0 and the boundary conditions on the piston and on the shock wave

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On the Motion of the Piston in an Ideal Gas

($f(1,q) = R(1,q) = P(1,q) = 1$ for $\lambda = 1$). Now it is assumed that the functions $f(x,q)$, $R(x,q)$, $P(x,q)$ permit the representation

$$(2.8) \quad f(x,q) = f_0(x) + qf_1(x) + \ldots, \quad R(x,q) = R_0(x) + qR_1(x) + \ldots,$$
$$P(x,q) = P_0(x) + qP_1(x) + \ldots$$

where f_0, R_0, P_0 correspond to the case $p_1 = 0$ (Ref.4-8) and where terms with higher powers of q are negligible. The $f_1(x)$, $R_1(x)$, $P_1(x)$ then must be determined from a linear system, where for the integration near the piston for f_0, R_0, P_0 the authors use the asymptotic solution of L. J. Sedov (Ref.1). The distribution of velocity, density and pressure for different q is graphically represented.
There are 2 figures, and 11 references: 8 Soviet, 1 English and 2 American.

SUBMITTED: August 27, 1959

Card 2/2

KOCHINA, N.N. (Moskva)

Properties of the motion of some ideal media in connection with a point explosion. Prikl.mat.i mekh. 24 no.3:504-510 My-Je '60. (MIRA 13:10)

(Explosions) (Fluid dynamics)

S/040/61/025/001/018/022
B125/B204

11.5100

AUTHOR: Kochina, N. N. (Moscow)

TITLE: The thermodynamic functions for some concrete forms of the internal energy of a perfect compressible medium

PERIODICAL: Prikladnaya matematika i mekhanika, v. 25, no. 1, 1961, 148-149

TEXT: The present paper deals with the general solution of the partial differential equation determining the temperature dependence of the internal energy for a perfect two-parameter medium, viz, for various concrete forms of internal energy. In all the cases investigated here, the internal energy depends on two arbitrary functions of a single argument. The internal energy ε of the medium is assumed to be given as a function of pressure p and density ρ: $\varepsilon(p,\rho)=\frac{p_0}{\rho_0}E(P,R)+\text{const}$ $(P=\frac{p}{p_0}, R=\frac{\rho}{\rho_0})$, where p_0 and ρ_0 are constants with the dimension of pressure and of density. The temperature T must satisfy the linear differential equation

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The thermodynamic functions for...

$\tau_\tau + (R^2\frac{\partial E}{\partial R} - P)\frac{\partial \tau}{\partial P} - R^2\frac{\partial E}{\partial P}\frac{\partial \tau}{\partial R} = 0$. The characteristic system of this equation is $\frac{d\tau}{\tau} = \frac{dP}{P - R^2\partial E/\partial R} = \frac{dR}{R^2\partial E/\partial P}$. If $E(P,R)$ has the form $E(P,R) = P\psi(R)$, where $\psi(R)$ is an arbitrary function, the motion in a medium with strong explosion will be of similarity-type. In this case, the system $\frac{d\tau}{\tau} = \frac{dP}{P - R^2\partial E/\partial R} = \frac{dR}{R^2\partial E/\partial P}$ may be integrated by quadratures and equation (3) then has the solution

$\tau = \exp\int \frac{dR}{R^2\psi(R)}\Phi(\psi)\ \psi = P\psi(R)\exp\left[-\int\frac{dR}{R^2\psi(R)}\right]$ (6), where Φ is an arbitrary function. The first of these two formulas and (2) supply for entropy $\sigma = \sigma_0 + \int\frac{d\psi}{\Phi(\psi)}$. The problem of the strong point explosion with an internal energy of the form $E(P,R) = P\psi(R)$ has already been solved in an

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earlier paper by N. N. Kochina and N. S. Mel'nikova (Ref. 3) for three concrete forms of the function $\psi(R)$. The author, besides, investigated (Ref. 4) a point explosion in a compressible medium in a linearized form of observation. If the internal energy of the medium has the form $E(P,R) = P\psi(R) + \Delta(P,R)$, where $\psi(R)$ and $\Delta(P,R)$ are arbitrary functions (where, besides, $\Delta(P,R)$ is small compared to $P\psi(R)$, one finds for temperature and for entropy

$$\tau = \exp\int\frac{dR}{R^2\psi(R)}\left\{\Phi(\psi)\left[1 - \int\frac{1}{R^2\psi(R)}\exp\left(-\int\frac{dR}{R^2\psi(R)}\right)\frac{\partial\Delta(R,\psi)}{\partial\psi}dR\right] + \right.$$
$$\left. + \Phi'(\psi)\int\exp\left(-\int\frac{dR}{R^2\psi(R)}\right)\frac{\partial\Delta(R,\psi)}{\partial R}dR\right\} \quad (9)$$

$$\sigma = \sigma_0 + \int\frac{1}{\Phi(\psi)}\left[d\psi + \exp\left(-\int\frac{dR}{R^2\psi(R)}\right)\frac{\partial\Delta(R,\psi)}{\partial R}dR\right] \quad (10)$$

where ψ is defined by (6). If the function $\Delta(P,R)$ is assumed to be not small, these formulas describe the general solution of Eq. (3), and determine entropy according to $d\sigma = \frac{dE + PdR^{-1}}{\tau}$, if $E(P,R) = P\psi(R) + \Delta(R)$

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or $E(P,R) = P\varphi(R) + \Delta(R)$ holds. If the formulas last written down hold, (9) and (10) go over into the following expressions

$$\tau = \exp\int \frac{dR}{R^2\varphi(R)}\,\Phi(\psi), \qquad s = s_0 + \int \frac{d\psi}{\Phi(\psi)} \tag{13}$$

$$\psi = P\varphi(R)\exp\left(-\int \frac{dR}{R^2\varphi(R)}\right) + \int \Delta'(R)\exp\left(-\int \frac{dR}{R^2\varphi(R)}\right)dR$$

$$\tau = \left[\exp\int \frac{dR}{R^2\varphi(R)} + \Delta'(\psi)\right]\Phi(\psi), \qquad s = s_0 + \int \frac{d\psi}{\Phi(\psi)} \tag{14}$$

$$\psi = P\varphi(R)\exp\left(-\int \frac{dR}{R^2\varphi(R)}\right)$$

These formulas were also derived by V. P. Korobeynikov and Yu. L. Yakimov (dissertation 1959). Besides the two cases just investigated, Eq. (4) may be integrated, and the general solution of Eq. (3) for media with an internal energy of the form $E(P,R) = \frac{1}{R}\psi(P) + \Delta(P)$

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$$\tau = \exp\int\frac{dP}{[P+\varphi(P)]}\Phi(\psi), \quad \sigma = \sigma_0 + \int\frac{d\psi}{\Phi(\psi)} \tag{16}$$

$$\psi = \frac{[P+\varphi(P)]}{R}\exp\left(-\int\frac{dP}{[P+\varphi(P)]}\right) + \int\Delta'(P)\exp\left(-\int\frac{dP}{[P+\varphi(P)]}\right)dP$$

$$E(P, R) = \omega(R)\,\eta\,[P/R^{n}\omega'(R)] \tag{17}$$

$$\tau = \exp\int\frac{d\xi}{[\xi-\eta(\xi)]}\Phi(\psi), \quad \sigma = \sigma_0 + \int\frac{d\psi}{\psi^{n}\Phi(\psi)}$$
$$\xi = \frac{P}{R^{n}\omega'(R)}, \quad \psi = \frac{1}{\omega(R)}\exp\int\frac{\eta'(\xi)}{[\xi-\eta(\xi)]}\,d\xi \tag{18}$$

$$E(P, R) = \omega(R) + \eta\,[P/R^{n}\omega'(R)] \tag{19}$$

$$\tau = (1-\xi)\Phi(\psi), \quad \sigma = \sigma_0 + \int\frac{d\psi}{\Phi(\psi)}, \quad \xi = \frac{P}{R^{n}\omega'(R)}, \quad \psi = \omega(R) + \int\frac{\eta'(\xi)\,d\xi}{(1-\xi)} \tag{20}$$

may be determined. The corresponding expressions for τ, σ and ψ are given. φ, Δ, ω, η, and Φ are arbitrary functions of a single argument. There are 5 Soviet-bloc references.

SUBMITTED: November 3, 1960

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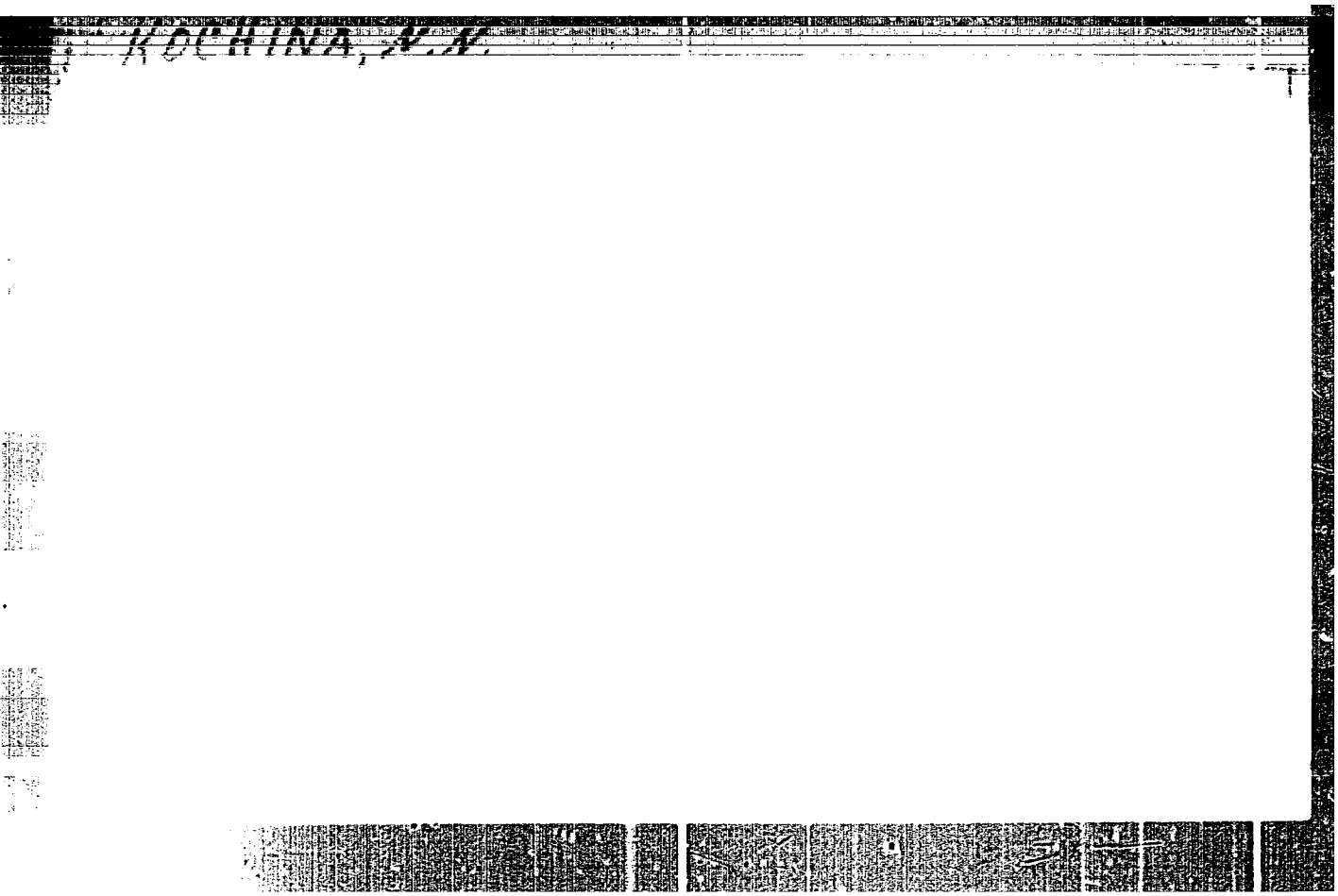

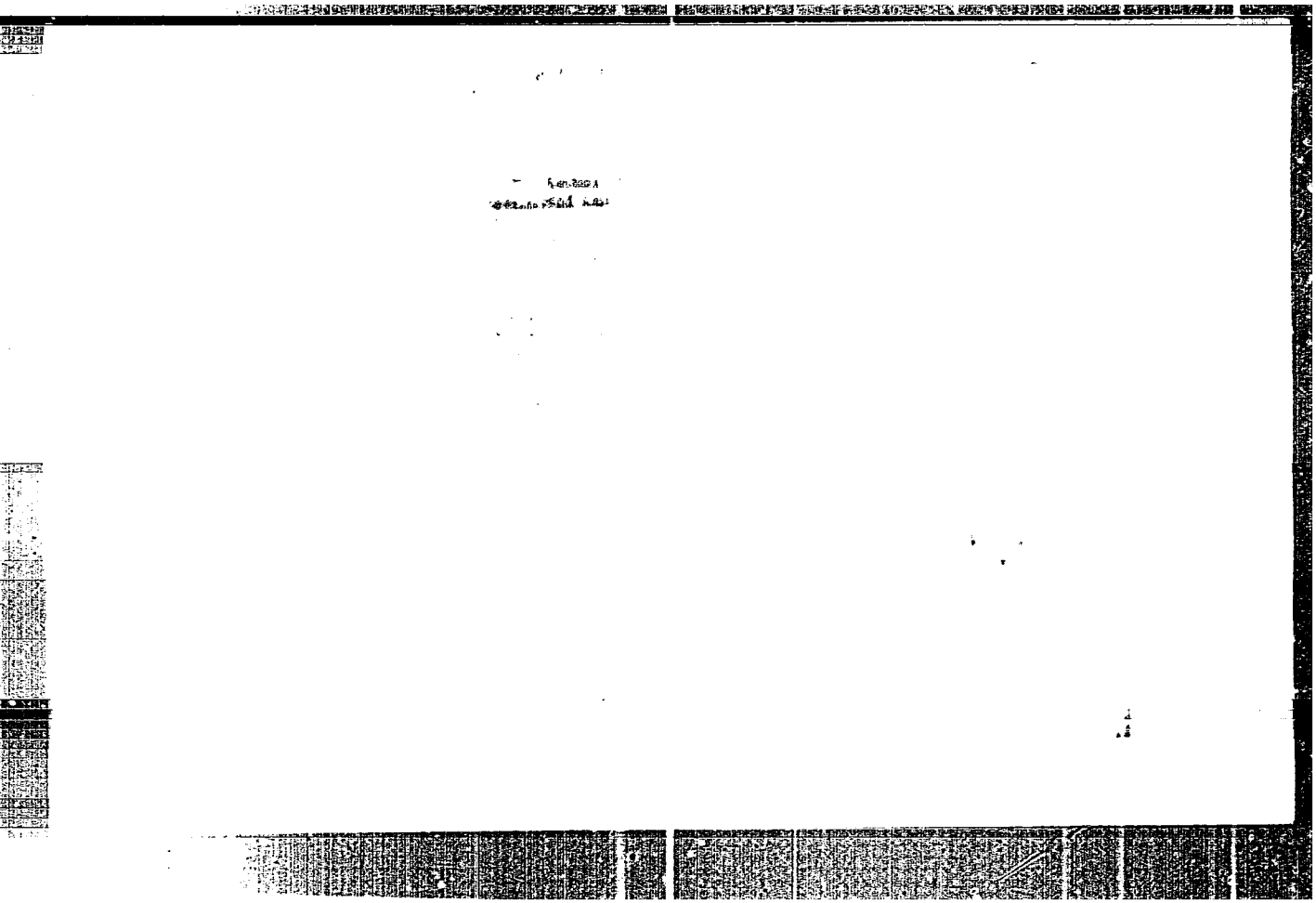

KOCHINA, N. N.

USSR/ Physics - Aerodynamics

Card : 1/1

Authors : Kochina, N. N.

Title : About one particular exact solution of equations of unstabilized one-dimensional movement of a gas.

Periodical : Dokl. AN SSSR, 97, Ed. 3, 407, July, 1954

Abstract : Proves that the system of eqs. of one-dimensional unstabilized movement of a perfect gas has a particular solution, depended on two arbitrary functions, which can be determined from recurrent formulas. Two references.

Institution : ...

Presented by : L. I. Sedov, Academician, May 20, 1954

KOCHINA, N.N

AUTHOR: KOCHINA, N.N. (Moscow). 40-4-1/24

TITLE: Some Rigorous Solutions of the Equations of Motion of a Perfect Gas in the One-dimensional Instationary Case (Nekotoryye tochnyye resheniya uravneniy odnomernogo neustanovivshegosya dvisheniya soversheennogo gaza).

PERIODICAL: Prikladnaya Mat.i Mekh., 1957, Vol.21, Nr 4, pp.449-458 (USSR)

ABSTRACT: The starting point of the investigation is a verbal information of L.Sedov concerning his results not yet published till now which he intends to take into the fourth edition of his book on similarity and dimensional methods. The one-dimensional instationary motion of a compressed gas is described by the system

(1) $\frac{\partial v}{\partial t} + v\frac{\partial v}{\partial r} + \frac{1}{\rho}\frac{\partial p}{\partial r} = 0$; $\frac{\partial \rho}{\partial t} + \frac{\partial \rho v}{\partial r} + \frac{(\nu-1)\rho v}{r} = 0$;

$$\frac{\partial}{\partial t}\left(\frac{p}{\rho^\gamma}\right) + v\frac{\partial}{\partial r}\left(\frac{p}{\rho^\gamma}\right) = 0$$

For $\nu = 1$ there exists the solution

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Some Rigorous Solutions of the Equations of Motion of a Perfect Gas in the One-dimensional Instationary Case 40-4-1/24

$$v = \frac{r_0}{t} V(\lambda) \ , \quad \rho = \frac{a}{r_0^{k+3} t^s} R(\lambda) \ , \quad p = \frac{a}{r_0^{k+1} t^{s+2}} P(\lambda)$$

where r_0 = const, τ = const have the dimensions of length and time, $[a] = ML^kT^s$. The parameters z, λ, R :

$$\lambda = \frac{\tau}{t}\exp\frac{x}{r_0} \ , \quad z = \frac{\gamma P}{R}$$

satisfy a system of ordinary differential equations of the form

$$\frac{dz}{dV} = f(z,V,\gamma,s) \ , \quad \frac{d\ln\lambda}{dV} = \varphi(z,V,\gamma,s) \ , \quad \frac{d\ln R}{dV} = \psi(z,V,\gamma,s)$$

which possesses the integral $z = CR^{2/s}(1-V)^{1-\gamma+2/s}$ and for $s = -2$ the energy integral

$$R\left[z(\gamma V-1) + \frac{1}{2}\gamma(\gamma-1)V^2(V-1)\right] = -KC$$

Card 2/4 K = const, C = const .

Furthermore, according to Sedov, (1) possesses the solution

$$v = \frac{r}{t} V(\lambda),\ \rho = \frac{a}{r^{k+3} t^{s}} R(\lambda),\ p = \frac{aP(\lambda)}{r^{k+1} t^{s+2}},\ \lambda = \frac{r}{r_o} \exp(-\frac{t}{t})$$

where z, R, λ satisfy a system of 3 ordinary differential equations which possesses the integral

$$z = (AR)^{-\frac{2+\nu(\gamma-1)}{k+3-\nu}} (1-V)^{-\frac{(k+3)(\gamma-1)+2}{k+3-\nu}}$$

and for $k = \nu-1$, $s = -2$ the energy integral

$$R\left[z(\gamma V-1) + \frac{1}{2}\gamma(\gamma-1)V^2(V-1)\right] = -\frac{C}{A} .$$

The author very skillfully performs the discussion of these new solutions of Sedov, investigates the form of the integral curves in the single cases, pays special attention to the discontinuous solutions and gives the physical interpretation of the solutions. In several figures the course of the integral curves and the variation of pressure and density in special cases is represented.

CARD 3/4

AUTHOR: Kochina, N.N. and N.S. Mel'nikova (Moscow) 40-22-1-1/15

TITLE: On Strong Point Explosions in a Compressible Medium (O sil'nom tochechnom vzryve v szhimayemoy srede)

PERIODICAL: Prikladnaya Matematika i Mekhanika, 1958, Vol 22, Nr 1, pp 3 - 15 (USSR)

ABSTRACT: The problem of strong point explosions in an ideal gas was solved by Sedov [Ref 1,2,3]. He found the solution for plane, cylindrical and spherical waves. Also the set up for the solution of the point explosion problem in more general media is due to Sedov. In particular he considered explosions in incompressible fluids. The two solutions given by Sedov can be applied to find the solution of similar tasks for more general problems. In particular for point explosions in water. The authors investigate similar solutions of point explosion shocks for three concrete new forms of equations of the state media which are assumed to be ideal.

The case of spherical symmetry is mainly considered. Since general equations of state do not exist for water, an equation

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is set up in the form

(4.1) $$p = \psi(S)(\varrho^{\varkappa} - \varrho_0^{\varkappa})$$

Here $\psi(S)$ is a certain function of the entropy S and has about the value 7. The results obtained by this equation of state are discussed for different cases and plotted in diagrams. There are 8 figures and 7 references, 4 of which are Soviet, and 3 American.

SUBMITTED: October 22, 1957

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10(1)

AUTHORS: Kochina, N.N. and Mel'nikova, N.S. (Moscow) SOV/40-22-4-3/26

TITLE: On the Nonsteady Motion of a Gas Which is Ejected by a Piston Without Considering the Back Pressure (O neustanovivshemsya dvizhenii gaza, vytesnyayemogo porshnem, bez ucheta protivodavleniya)

PERIODICAL: Prikladnaya matematika i mekhanika, 1958, Vol 22, Nr 4, pp 444-451 (USSR)

ABSTRACT: The authors investigate the nonsteady motion of a compressible gas which is pushed out of a cylinder by a moving piston. The back pressure of the gas is neglected and it is assumed that the piston moves according to a law $v = ct^m$. A problem of this kind was solved for the first time by Sedov for the case m = 0. For three other special values of the parameter m solutions have been given by other authors. In the present paper a qualitative image of the solutions of the equations of motion is given for a large range of the number m. Therewith it appeared that according to the value of the adiabatic exponent and according to the geometric problem the qualitative image of the flow may be very

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different. By forming a non-dimensional characteristic magnitude it is shown that similar solutions of the problem can be found. Furthermore it is shown that the obtained undimensional solutions can be also extended to symmetrical plane or spherical motions. Thus it is possible e.g. to calculate the motions of gases during strong explosions in the space. In this case the products of combustion of the explosion medium act the part of the cylinder.
Compared with the paper of Sedov the present paper principally contains no news. But it is distinguished by a careful discussion of numerous special cases.
There are 8 figures, and 9 references, 7 of which are Soviet, and 2 English.

SUBMITTED: April 1, 1958

10(7) SOV/20-122-2-9/42

AUTHORS: Kochina, N. N., Mel'nikova, N. S.

TITLE: On the Non-Steady Motion of a Gas Forced out by a Piston with Allowance for Counterpressure (O neustanovivshemsya dvizhenii gaza, vytesnyayemogo porshnem, s uchetom protivodavleniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1950, Vol 122, Nr 2, pp 192-195 (USSR)

ABSTRACT: This paper investigates the problem of the point explosion in a medium at rest with allowance for the forcing out of the air by the products of the explosion. The authors assume that the motion of the gaseous masses is modelled by the expansion of a piston according to a given law. The initial pressure p_1 is assumed to be different from zero, and the gaseous masses are assumed to move like a piston according to the law

$$v_a = ct^m \left\{ 1 + \frac{(m-1)}{2^{\prime}2m-1)} \left(\frac{\gamma p_1 \lambda_a}{\varrho_1 c}\right)^2 At^{-2m} \right\} .$$

Card 1/3 c and m denote constants, ϱ_1 - the initial density, λ_a - the

On the Non-Steady Motion of a Gas Forced out by a Piston with Allowance for Counterpressure

dimensionless radius of the piston ($\lambda_* = r_*/r_2$), A - a dimensionless constant. The authors first introduce a system of dimensionless variables (f, R, P, λ, q, s). The solution of the moving piston may be reduced to the finding of the functions $f(\lambda,q)$, $R(\lambda,q)$, and $P(\lambda,q)$ in a certain region of the plane $\lambda,q (0 \leqslant q \leqslant 1)$. These functions satisfy the differential equations of the one-dimensional non-steady motion of a gas, and also boundary and initial conditions which are given in this paper. The linearized problem is then investigated, i.e. the terms of the order of magnitude q^2 and higher in the equations and boundary conditions are neglected. The corresponding system of the linear differential equations is given explicitly. The problem is reduced to the solution of the above-mentioned linearized system of differential equations in the interval $\lambda_* < \lambda < 1$ in consideration of the corresponding boundary conditions. The calculations are discussed step by step. The linear differential equations of the first order are solved by numerical integration for the special cases $m = -0,4$ and $m = -0,5$ ($\nu = 3$, $\gamma = 1,4$). In the

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On the Non-Steady Motion of a Gas Forced out by a Piston with Allowance for the Counterpressure

neighborhood of the piston, the asymptotic formulae have been used for the calculations. 3 diagrams demonstrate the distributions of the velocity, density, and pressure in the air behind the shock wave. In an other paper, the authors solved an analogous problem for the case $v_* = ct^m$ and also the problem of the non-steady motions of water which are caused by an expansion (of constant velocity) of a piston. The author thanks L. I. Sedov for useful advice. There are 3 figures and 8 references, 6 of which are Soviet.

PRESENTED: April 11, 1958, by L. I. Sedov, Academician

SUBMITTED: March 24, 1958

Card 3/3

KOCHINA, N.N. (Moskva)

Periodic solutions to Burgers' equation. Prikl. mat. i mekh. 25 no.6:1068-1075 N-D '61. (MIRA 14:12)
(Differential equations, Partial)

23830
S/020/61/138/002/012/024
B104/B207

26.1330

AUTHORS: Kochina, N. N. and Mel'nikova, N. S.

TITLE: The ways of solving the problem of a punctiform explosion in compressible media

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 2, 1961, 326-329

TEXT: L. I. Sedov solved the problem of a strong explosion in an ideal gas (Metody podobiya i razmernosti v mekhanike (Methods of similarity and dimension methods in mechanics), M., 1957). Strong punctiform explosions in an ideal compressible medium were studied by N. N. Kochina and N. S. Mel'nikova (Prikl. matem. i mekh., 22, no. 1 (1958)) and Yu. L. Yakimov (Rasprostraneniye udarnykh voln v ideal'nykh sredakh s proizvol'nymi fizicheskimi svoystvami (Propagation of shock waves in ideal media with arbitrary physical properties), dissertation, M., 1959). The present paper investigates the dependence of the solution of this problem on the explosion energy E_0, the initial pressure p_1 and the initial density ρ_1. The internal energy of an ideal medium as a function of

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The ways of solving the problem of a...

pressure and density may be defined as follows:

$$s(\rho, p) = \frac{\rho}{p}\varphi\left(\frac{\rho}{p_1}, \frac{p}{p_1}, \frac{p_1'}{p_1}, \frac{\rho_1'}{p_1}, \ldots, \frac{p_n'}{p_1}, \frac{p_1'}{p_1}, \frac{\rho_1'}{p_1}, \ldots, \frac{\rho_m'}{p_1}\right)$$

φ is a dimensionless function, p_1 and ρ_1 are the initial pressure and density, p_1^* and ρ_1^* the constants with the dimension of pressure and density respectively. The equation for a uniform, adiabatic, non-steady motion of an ideal medium has the following form:

$$\frac{\partial v}{\partial t} + v\frac{\partial v}{\partial r} + \frac{1}{\rho}\frac{\partial p}{\partial r} = 0, \quad \frac{\partial p}{\partial t} + \frac{\partial pv}{\partial r} + \frac{(\nu-1)pv}{r} = 0,$$
$$\left(\frac{\partial s}{\partial p} - \frac{\rho}{p^2}\right)\frac{dp}{dt} + \frac{\partial s}{\partial \rho}\frac{d\rho}{dt} = 0, \qquad (2)$$

where v, is the velocity, t, the time, r, the Euler coordinate, $\nu = 1$ for plane waves, $\nu = 2$ for cylindrical waves, and $\nu = 3$ for spherical waves. In the shock wave moving in an unperturbed medium ($v_1 = 0$) the following holds:

$$-\rho_1 c = \rho_2(v_2 - c), \quad p_1c^2 + p_1 = p_2(v_2 - c)^2 + p_2,$$
$$s_2 - s_1 = {}^1/_2(p_1 + p_2)(1/\rho_1 - 1/\rho_2) \qquad (3)$$

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The indices 2 refer to the shock wave front. The dimensionless coordinates

$$l = \frac{r}{r_0}, \tau = \frac{t}{t_0}, v, \frac{\rho_1^*}{\rho_1}, \frac{\rho_2^*}{\rho_1}, \ldots, \frac{\rho_n^*}{\rho_1}, \frac{p_1^*}{p_1}, \frac{p_2^*}{p_1}, \ldots, \frac{p_m^*}{p_1}; \quad (6)$$

$$\text{and} \quad r_0 = (E_0/\rho_1)^{1/\nu}, \quad t_0 = E_0^{1/\nu}\rho_1^{1/\nu}\rho_1^{-(\nu+1)/\nu}. \quad (7)$$

are introduced and it is shown that, if the internal energy is assumed as a linear function of pressure

$$\varepsilon(\rho, p) = \frac{p_1^*}{\rho_1}\left|P\varphi(R) + \Delta(R)\right| \quad \left(R = \frac{\rho}{\rho_1}, \; P = \frac{p}{p_1}\right), \quad (9)$$

from (3) the explicit expressions

$$P_2 = P_1 + \frac{\Delta(R_1) - \Delta(R_2) + P_1[\varphi(R_1) - \varphi(R_2) + 1/R_2 - 1/R_1]}{\varphi(R_2) - \varphi(R_1) + 1/R_2 - 1/R_1}, \; l_2 = 1 - \frac{R_1}{R_2}, \quad (10)$$

$$q = \frac{B(1 - R_1/R_2)(R_1[\varphi(R_2) + 1/2R_2] - 1/2)}{P_1[\varphi(R_2) - \varphi(R_1)] + \Delta(R_2) - \Delta(R_1) + P_1(1/R_2 - 1/R_1)} \quad \left(B = \frac{\rho_1^* D^2}{p_1}, \; l = \frac{v}{c}\right).$$

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are obtained. (6) and (7) show that the explosion energy depends solely on the variables l and τ (or the variable $\lambda = r/r_2$, $q = a_1^2/c^2$). Thus, it is possible, if the solution for a certain energy $E_0^{(1)}$ is known, to apply the solutions also to another energy $E_0^{(2)}$. The equations

$$r^{(2)} = (E_0^{(2)}/E_0^{(1)})^{1/\nu} r^{(1)}, \; t^{(2)} = (E_0^{(2)}/E_0^{(1)})^{1/\nu} t^{(1)} \quad (11)$$

hold, where $r^{(1)}$ and $t^{(1)}$ are the coordinates of the initial energy $E_0^{(1)}$ and $r^{(2)}$, $t^{(2)}$, those of $E_0^{(2)}$. It is furthermore shown that the equations

$$r^{(m)} = (E_0^{(m)}\rho_1^{(1)}/E_0^{(1)}\rho_1^{(m)})^{1/\nu} r^{(1)},$$

$$t^{(m)} = (E_0^{(m)}/E_0^{(1)})^{1/\nu}(\rho_1^{(m)}/\rho_1^{(1)})^{-(\nu+1)/\nu}(\rho_1^{(m)}/\rho_1^{(1)})^{1/\nu} t^{(1)}, \quad (12)$$

hold. The solutions of the problem for $\varepsilon = \frac{p}{\rho}\varphi(\rho/\rho_1, \rho_1^*/\rho_1, \rho_2^*/\rho_1, \ldots, \rho_m^*/\rho_1)$ and $\varepsilon = \frac{p}{\rho}\varphi(p/p_1, p_1^*/p_1, p_2^*/p_1, \ldots, p_n^*/p_1)$ of the internal energy are

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ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematics Institute imeni V. A. Steklov of the Academy of Sciences USSR)

PRESENTED: December 15, 1960, by L. I. Sedov, Academician

SUBMITTED: December 3, 1960

X

Card 6/6

KOCHINA, N.N. (Moskva)

Self-oscillations of very dense liquids in tubes. Prikl. mat. i mekh. 27 no.4:609-617 Jl-Ag '63. (MIRA 16:9)
(Oscillations)

14558
S/020/63/148/001/010/032
B112/B180

24 4300

AUTHOR: Kochina, N. N.

TITLE: Dynamic explosion of equilibrium in certain ideal media with zero temperature gradient

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 1, 1963, 57-60

TEXT: The internal energy of the medium under consideration is assumed to have the form

$$\varepsilon(\rho, p) = \frac{p}{\rho}\left\{\frac{1}{\gamma-1} + B_1 R^{\alpha_1} + B_2 R^{\alpha_2} + C_1 P^{\beta_1} + C_2 P^{\beta_2} + \int_{\alpha_0}^{\alpha_1} D(q) R^{q} P^{\frac{q}{\gamma(q-1)}} dq + \right. \quad (10).$$

$$\left. + \int_{\beta_0}^{\beta_1}\left[B(h) R^{h} + C(h) P^{\frac{h}{\gamma(h-1)}} + \sum_{i=1}^{I} D_i(h) R^{q_i} P^{\frac{q_i}{\gamma(h-q_i)}}\right] dh\right\}$$

$$\left(R = \frac{\rho}{\rho_0}, P = \frac{p}{p_0}\right).$$

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The constants and functions in this expression are determined by the equations of motion,

$$\partial M/\partial r = 4\pi r^2 \rho, \quad (1)$$

$$\partial \rho/\partial t + \partial \rho v/\partial r + 2\rho v/r = 0, \quad (2)$$

$$\partial v/\partial t + v\partial v/\partial r + (1/\rho)\partial p/\partial r + GM/r^2 = 0, \quad (3)$$

$$\partial T/\partial r = 0, \quad (4)$$

by the conditions to be fulfilled by the shock wave,

$$M_1 = M_2, \ -\rho_1 c = \rho_2(v_2 - c), \ p_1 + \rho_1 c^2 = p_2 + \rho_2(v_2 - c)^2, \quad (6)$$

and by the equation of the explosion of equilibrium,

$$\int_0^{r_2} (\rho v^2/2 + \rho\varepsilon(p,\rho) - \rho GM/r)4\pi r^2 dr = \int_0^{r_2} (\rho_1 \varepsilon(p_1,\rho_1) - \rho_1 GM/r)4\pi r^2 dr.$$

Some physically meaningful cases are discussed. There are 3 figures.

PRESENTED: July 5, 1962, by L. I. Sedov, Academician
SUBMITTED: June 30, 1962

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KOCHINA, N.N. (Moskva)

Solution of a nonlinear diffusion equation. Prikl. mat. i mekh. 28 no.4:699-707 Jl-Ag '64 (MIRA 17:8)

L 11592-66 EWT(d) IJP(c)
ACC NR: AP6002414 SOURCE CODE: UR/0020/65/165/005/1015/1018

AUTHOR: Kochina, N. N. 39

ORG: Mathematics Institute im. V. A. Steklov of the Academy of Sciences AN SSSR (Matematicheskiy Institut AN SSSR)

TITLE: On the periodic states of certain distributed systems

SOURCE: AN SSSR. Doklady, v. 165, no. 5, 1965, 1015-1018

TOPIC TAGS: electrolyte, electrolysis, linear system, periodic pulse, periodic function

16,44,55

ABSTRACT: A periodic solution of the diffusion equation in electrolytic systems is found in explicit form with a particular nonperiodic boundary condition. The author designates c (x,t) as the concentration of a substance in an electrolytic mixture. The function c (x,t) satisfies the equation of diffusion with diffusion coefficient D for certain initial and boundary conditions. The applied concentration u (x,t) is given by the formula

$$u(x,t) = c(x,t) - c_0 - (c^0 - c_0)x/l,$$

where $c_0 + (c^0 - c_0)x/l$ is the stationary condition of the system; c_0 is the value c (0,t) at the electrode surface; l is the thickness of the diffusion layer; c^0 is the value of the concentration at the boundary $x = l$. In the circumstances leading to autopulsation (see A. Ya. Gokhshteyn, DAN, 149, No. 4, 1963) the applied concentration

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ACC NR: AP6002414

u (x,t) is a bounded periodic function satisfying the diffusion equation

$$\partial u/\partial t = D\,\partial^2 u/\partial x^2,$$

which has the boundary condition

$$\partial u/\partial x|_{x=0} = F$$

at the surface of the electrode. F is an S-form function which is dependent upon parameters and characteristics of the electrolytic system. Equations are developed for $F_1(u)$ and $F_2(u)$, the curves for the two states of pulsation. The applied concentration is found from the differential equation to be

$$u(x,t) = -\left(\frac{D}{\pi}\right)^{1/2}\cdot\int_{-\infty}^{t}\left\{\exp\left(-\frac{x^2}{4D(t-\tau)}\right)\right\}\chi(\tau)\int_{0}^{\infty}\exp\left[-\lambda\xi-\frac{(x+\xi)^2}{4D(t-\tau)}\right]d\xi\,\frac{d\tau}{\sqrt{t-\tau}},$$

where

$$\chi(\tau)=\begin{cases}Q_1 & \text{при } \alpha+kT\le t\le\beta+kT,\\ & (k=0,\pm1;\pm2,\ldots).\\ Q_2 & \text{при } \beta+kT\le t\le\gamma+kT.\end{cases}$$

Equations and discussions of the pulsation frequency of the system are given. A periodic solution is found for the equation

$$\partial u/\partial t + A\,\partial u/\partial x = -\delta u + \nu\,\partial^2 u/\partial x^2.$$

It is shown that the problem can be reduced to one of finding constants from an infinite system of linear equations. This paper was presented by academician L. I. Sedov on 23 April 1965. Orig. art. has: 19 equations and 3 figures.

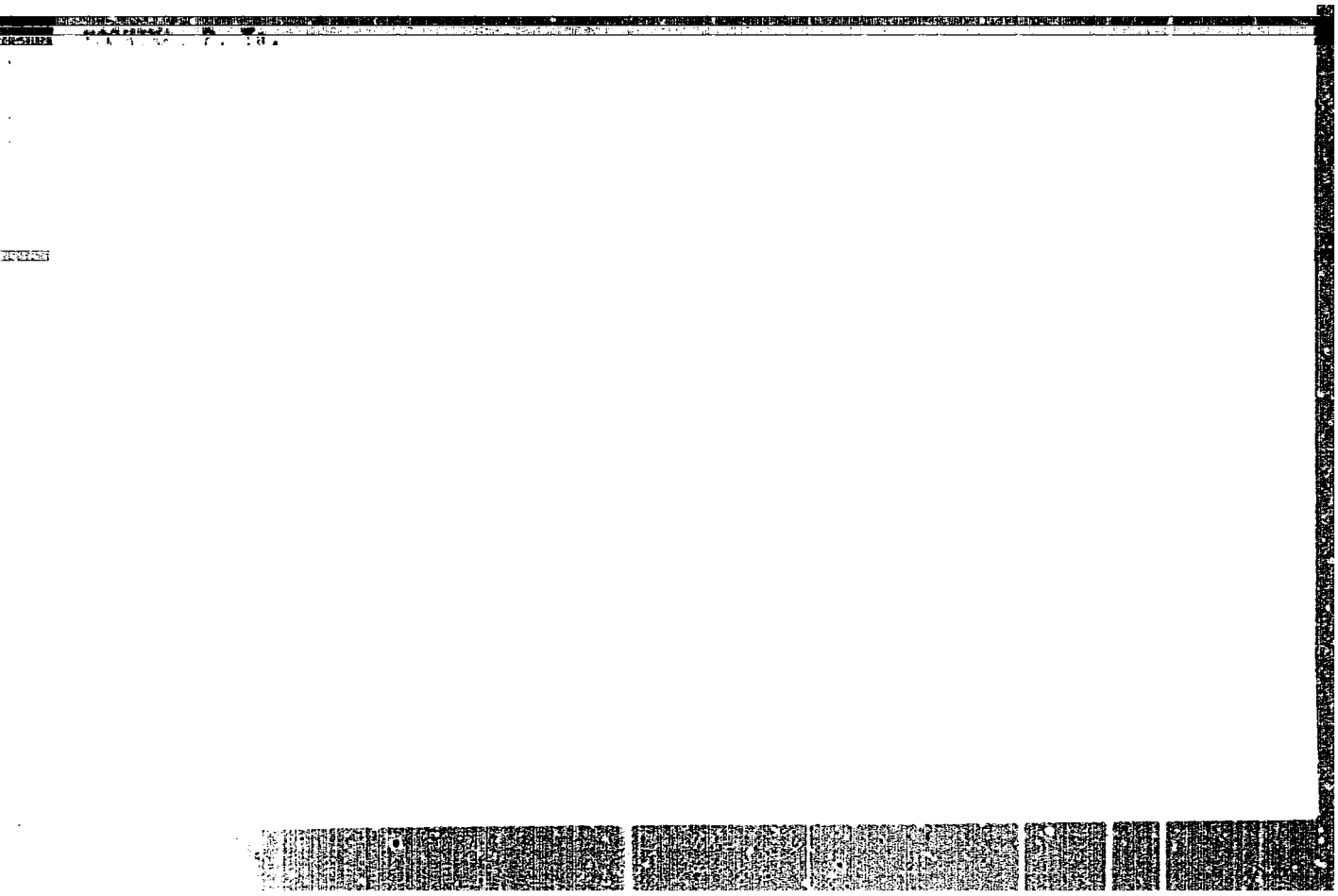
SUB CODE: 20, 13/ SUBM DATE: 07Apr65/ ORIG REF: 008

Card 2/2 Fcc

KOCHINA, N. V. Cand Med Sci -- (diss) "Effect of certain antibiotics upon salmonella - the [illegible] of food [illegible]infections." Khar'kov, 1956. 12 pp (Min of Health UkSSR. Khar'kov State Med Inst), 200 copies (KL, 14-58, 117)

KOCHINA, O.O. [Kochyna, O.O.]

Use of ion exchange resins in agriculture. Khim. prom. [Ukr] no.4:11-12 O-D'63. (MIRA 17:6)



BARENBLATT, G.I. (Moscow); KOCHINA, P.Ya. (Novosibirsk); MIKHAILOV, G.K. (Moscow)

"Basic problems of the theory of fluid motion in porous media"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

ARBUZOV, A.Ye., akad.; VAVILOV, S.I., akad.; VOL'FKOVICH, S.I., akad.; KOCHINA, P.Ya., akad.; LANDSBERG, G.S., akad.; LEYBENZON, L.S., akad.; PORAY-KOSHITS, A.Ye., akad.; SMIRNOV, V.I., akad.; FRUMKIN, V.G., akad.; CHERNYAYEV, V.I., akad.; KAPUSTINSKIY, A.F.; KORSHAK, V.V.; KRAVKOV, S.V.; NIKIFOROV, P.M.; PETROV, A.D.; PREDVODITELEV, A.S.; FRISH, S.E.; CHETAYEV, N.G.; CHMUTOV, V.K.; SHOSTAKOVSKIY, M.F.; KUZNETSOV, I.V., red.; MIKULINSKIY, S.R., red.; MURASHOVA, N.Ya., tekhn.red.

[Men of Russian science; essays on prominent persons in natural science and technology: Mathematics, mechanics, astronomy, physics, chemistry] Liudi russkoi nauki; ocherki o vydaiushchikhsia deiateliakh estestvoznaniia i tekhniki: matematika, mekhanika, astronomiia, fizika, khimiia. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1961. 599 p. (MIRA 14:10)

1. Chleny-korrespondenty AN SSSR (for Kapustinskiy, Korshak, Kravkov, Nikiforov, Petrov, Predvoditelev, Frish, Chetayev, Chmutov, Shostakovskiy). (Scientists)

KOCHINA, Pelageya Yakovlevna, akademik; MOSIYENKO, Nikolay Aleksandrovich, kand.tekhn.nauk; LAMIN, Leonid Anatol'yevich, nauchnyy sotrudnik; NIKOL'SKAYA, Yuliya Pavlovna, starshiy nauchnyy sotrudnik; kand.-tekhn.nauk

Problem of Kulunda. Nauka i zhizn' 29 no.1:33-39 Ja '62. (MIRA 15:3)

1. Predsedatel' Koordinatsionnoy komissii po probleme "Kulunda" (for Kochina). 2. Nachal'nik Kulundinskoy ekspeditsii (for Mosiyenko). 3. Biologicheskiy institut Sibirskogo otdeleniya AN SSSR (for Lamin). 4. Khimiko-metallurgicheskiy institut Sibirskogo otdeleniya AN SSSR (for Nikol'skaya).
(Kulunda Steppe--Irrigation)

KOCHINA, P.Ya., akademik; MOSIYENKO, N.A., kand.tekhn.nauk

Irrigating with ground water in India. Gidr. i mel. 14 no.8: 47-56 Ag '62. (MIRA 15:9)

1. Sibirskoye otdeleniye AN SSSR.
(India—Irrigation)

KOCHINA, P.Ya., akademik; MOSIYENKO, N.A., kand.tekhn.nauk

Across irrigated India. Priroda 52 no.10:81-86 '63. (MIRA 16:12)

1. Institut gidrodinamiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.

KOCHINA, P.Ya., akademik (Novosibirsk); MOSIYENKO, M.A., kand. tekhn. nauk (Novosibirsk); SHCHERBAN', Ye.V., inzh.-gidrogeolog (Novosibirsk)

Underground waters in the Kulunda Steppe and their utilization in irrigation. Gidr. i mel. 16 no.10:15-19 O '64.

(MIRA 17:12)

KOCHINA, P. Ya.

"Modern problems of liquid movement theory in porous media."

report delivered at 11th Intl Cong, Intl Assn for Hydraulic Research, Leningrad, 6-11 Sep 1965.

KOCHINA, V.N.

VOLOVICH, N.I.; KRASOVITSKAYA, A.M.; NIKULINSKAYA, R.M.; KLATOPOL'SKAYA, R.D.; KUKL'SHTEYN, R.I.; SAVITSKAYA, E.K.; PANKRUSHENKO, L.I.; DENKACH, V.S., professor, direktor; NIKIFOROVA, O.I.; SOKOLOV, G.S.; ISTOMINA, I.D.; GORDIYENKO, Ye.G.; KLYUCHNIKOVA, L.Sh.; HADTOKA, V.L.; KOCHINA, V.N.; AVTONOMOVA, L.V.; BERENSHTEYN, L.G.; GOL'DENBERG, R.A.; KELLER, O.S.; SAVCHENKO, A.N.

Study of efficacy of the enteral immunization against dysentery. Authors' abstract. Zhur.mikrobiol.epid.i immun. no.8:27 Ag '53. (MLRA 6:11)

1. Ukrainskiy institut epidemiologii i mikrobiologii im. I.I.Mechnikova v Khar'kove. (Dysentery)